



## DEMO BOARD TEST REPORT

# 220~265VAC/50HZ, PF>0.7, CW 260V/30mA and RGB 15V/150mA Five-Channel Linear Solution for Smart LED with KP18069

## FEATURES

- Meet the Latest Harmonic Current Requirements of IEC-61000-3-2:2019
- PF > 0.7
- 1024 Grayscale Dimming
- 0.1% Dimming Depth
- ±5% Output Constant Current Accuracy between Chips
- No Flicker
- No Audible Noise
- Built-in Line Compensation Function
- RGB Channel Supports Chop Dimming and Analog Dimming
- Built-in 500V HV IC Power supply Circuit
- Thermal Protection
- Compact Package ESSOP-10L

## APPLICATIONS

- Smart LED Bulbs

## GENERAL DESCRIPTION

The Demo Board is designed to demonstrate the high performance of KP18069. KP18069 is a high-precision five-channel LED linear constant current dimming IC which meets the latest Harmonic Current requirements of IEC-61000-3-2:2019 and PF>0.7. It can set five-channel currents independently by I2C (Inter-Integrated-Circuit Bus) to support various dimming modes to meet the requirements of dimming gray scale in various occasions. KP18069 integrates line compensation function, which can easily meet the requirement of constant input power without additional components. And it integrates OTP function which will automatically reduce the output current to ensure the safety and reliability of the system. And it meets the EN55015B conducted and radiated EMI requirement.

The Demo Board is typically designed for 9W application with 220-265Vac input, 260V/30mA output of the CW channels and 15V/150mA output of the RGB channels within A60 LED Bulb.

## DEMO BOARD SEPCIFICATION

| Description               | Symbol    | Min                         | Type | Max | Unit | Note        |
|---------------------------|-----------|-----------------------------|------|-----|------|-------------|
| Input Voltage             | Vin       | 220                         |      | 265 | Vac  | 50Hz        |
| Output                    | Vout/Iout | CW:260V/30mA; RGB:15V/150mA |      |     |      |             |
| System Efficiency         | $\eta$    | 80                          |      |     | %    | 230Vac/50Hz |
| Power Factor              | PF        | 0.7                         |      |     |      | 230Vac/50Hz |
| Total Harmonic Distortion | THD       | IEC-61000-3-2:2019          |      |     |      |             |
| Startup Time              | Tst       |                             |      | 300 | ms   | 230Vac/50Hz |
| Standby Power             |           |                             |      | 200 | mW   | 230Vac/50Hz |
| Conducted EMI Margin      |           | 6                           |      |     | dB   | EN55015     |
| Radiated EMI Margin       |           | 6                           |      |     | dB   | EN55015     |
| Surge Test                |           | 1                           |      |     | kV   |             |

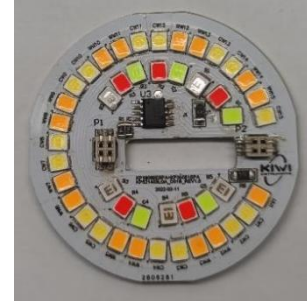
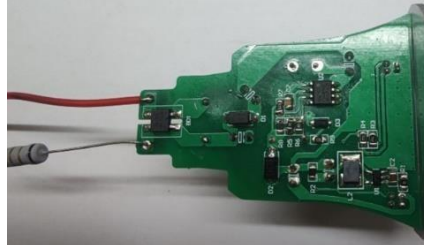
**Note:** The table above shows the minimum acceptable performance of the design. Actual performance is listed in the results section.

**Demo Board of KP18069ESSPA+KP35051SPA+KP521403LGA-D01-REV1.0**

**Part A**

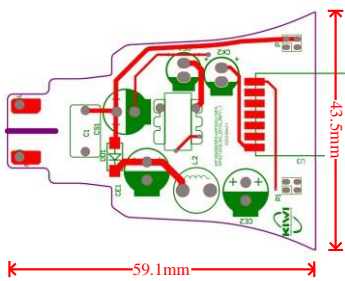


**Part B**

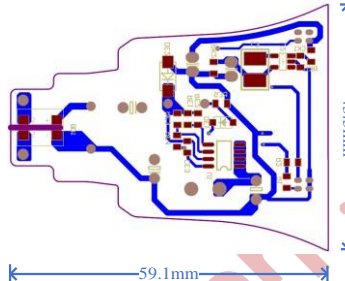


**Printed Circuit Board Layout**

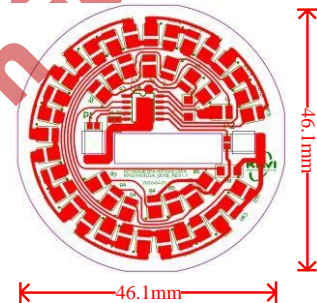
**Top Layer (Part A)**



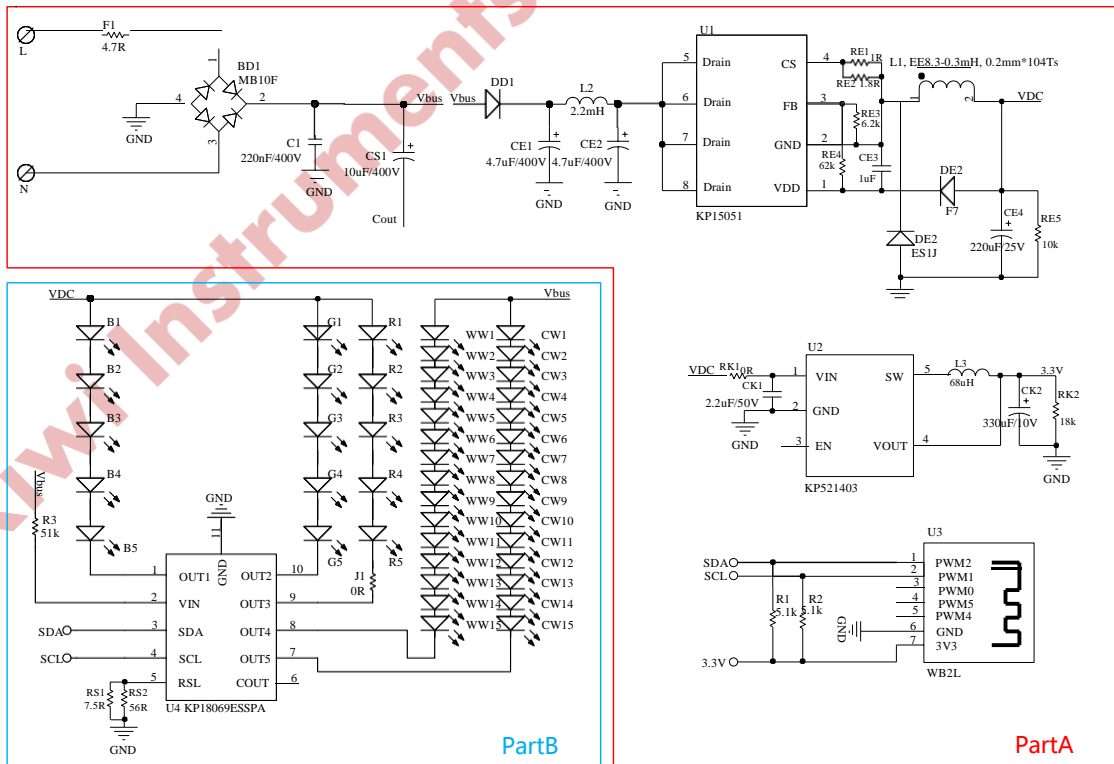
**Bottom Layer (Part A)**



**Top Layer (Part B)**



**Schematic**





**Demo Board Test Report**  
**220~265VAC/50HZ, PF>0.7, CW 260V/30mA and RGB 15V/150mA**  
**Five-Channel Linear Solution for Smart LED with KP18069**

**Bill of Material**

| No | Designator | Value        | Description  | Package | Manufacturer         | Part Number  |
|----|------------|--------------|--|---------|----------------------|--------------|
| 1  | C1         | 220nF/400V   | 400Vdc(160Vac), P=7.5mm, T=5mm   | TH      | STE                  |              |
| 2  | CE1, CE2   | 4.7μF/400V   | Electrolytic Cap, 400V,8*12  | TH      | AISHI                |              |
| 3  | CE3        | 1μF          | Ceramic Cap, 25V X7R   | 0805    | WE                   |              |
| 4  | CE4        | 220μF/25V    | Electrolytic Cap, 25V,8*11.5   | TH      | jianghai             |              |
| 5  | CK1        | 2.2μF/50V    | Ceramic Cap, 25V X7R   | 0805    | WE                   |              |
| 6  | CK2        | 330μF/10V    | Electrolytic Cap, 10V,6.3*11   | TH      | WE                   |              |
| 7  | CS2        | 10μF/400V    | Electrolytic Cap, 400V,8*20  | TH      | AISHI                |              |
| 8  | DD1        | 600V/1A      | Fast Recovery Rectifiers, TRR=150ns(VF=1.1V@IF=1A)                           | SMA     | YEA SHIN             | M7           |
| 9  | DE1        | 1000V/1A     | Fast Recovery Rectifiers,TRR=500ns(VF=1.3V@IF=1A)                            | SOD-123 | YEA SHIN             | F7           |
| 10 | DE2        | 600V/1A      | 1.0 AMP Surface Mount Super Fast Recovery Rectifiers,TRR=35ns(VF=1.7V@IF=1A) | SMA     | Taiwan Semiconductor |              |
| 11 | L1         | 0.3mH        | Single Winding Inductor, Bobbin= EE8.3                                       | TH      | WE                   |              |
| 12 | L2         | 2.2mH        | WE-TI Inductor,Isat=0.4A,Rdc=2.4Ω,8*12                                       | 8012    | WE                   |              |
| 13 | L3         | 68μH         | WE-TI Inductor,Isat=0.33A,Rdc=2.1Ω,1812                                      | 1812    | WE                   |              |
| 14 | BD1        | 1000V/0.8A   | SINGLE PHASE SILICON BRIDGE(VF=1V@IF=0.4A)                                   | SOP-4   | SHIKUES              | MB10F        |
| 15 | F1         | 4.7R         | Fuse Resistor,1W   | TH      | Yanxin               |              |
| 16 | R1, R2     | 5.1k         | Film Resistor, 5%  | 0805    | Yageo                |              |
| 17 | R3         | 51k          | Film Resistor, 5%  | 0805    | Yageo                |              |
| 18 | RE1        | 1R           | Film Resistor, 5%  | 0805    | Yageo                |              |
| 19 | RE2        | 1.8R         | Film Resistor, 5%  | 0805    | Yageo                |              |
| 20 | RE3        | 6.2k         | Film Resistor, 5%  | 0805    | Yageo                |              |
| 21 | RE4        | 62k          | Film Resistor, 5%  | 0805    | Yageo                |              |
| 22 | RE5        | 10k          | Film Resistor, 5%  | 0805    | Yageo                |              |
| 23 | RK1        | 0R           | Film Resistor, 5%  | 0805    | Yageo                |              |
| 24 | RK2        | 18k          | Film Resistor, 5%  | 0805    | Yageo                |              |
| 25 | RS1        | 7.5R         | Film Resistor, 5%  | 0805    | Yageo                |              |
| 26 | RS2        | 56R          | Film Resistor, 5%  | 0805    | Yageo                |              |
| 27 | J1         | 0R           | Film Resistor, 5%  | 1206    | Yageo                |              |
| 28 | U1         | KP15051SPA   |  | SOP-8   | Kiwi Instrument      | KP15051SPA   |
| 29 | U2         | KP521403LGA  |  | SOT23-5 | Kiwi Instrument      | KP521403LGA  |
| 30 | U3         | Wifi Module  |  | WB2L    | tuya                 |              |
| 31 | U4         | KP18069ESSPA |  | ESOP-10 | Kiwi Instrument      | KP18069ESSPA |
| 32 | B1~B5      | Blue LED     | LED Voltage 3V   | 2835    | Any                  |              |
| 33 | G1~G5      | Green LED    | LED Voltage 3V   | 2835    | Any                  |              |
| 34 | R1~R5      | Red LED      | LED Voltage 3V   | 2835    | Any                  |              |
| 35 | WW1~WW15   | Warm LED     | LED Voltage 18V  | 2835    | Any                  |              |
| 36 | CW1~CW15   | Cool LED     | LED Voltage 18V  | 2835    | Any                  |              |
| 37 | P1, P2     | DSP-2-2      | 2*2  |         |                      |              |

## Test Result

### 1. Steady characteristics

#### 1.1 System Efficiency

**Standard:** PF>0.7,  $\eta$ >80%. @ 230Vac input & full load

**Result:** Pass

| Vin (Vac) | Fline (Hz) | Pin (W) | Vo (V) | Io (mA) | PF    | Eff (%) |
|-----------|------------|---------|--------|---------|-------|---------|
| 220       | 50         | 8.76    | 256.3  | 28.2    | 0.739 | 82.51   |
| 230       |            | 9.33    | 257.1  | 29.21   | 0.758 | 80.49   |
| 240       |            | 9.87    | 256.3  | 29.75   | 0.767 | 77.25   |
| 250       |            | 10.21   | 255.4  | 29.61   | 0.767 | 74.07   |
| 265       |            | 10.47   | 254.7  | 28.01   | 0.754 | 68.11   |

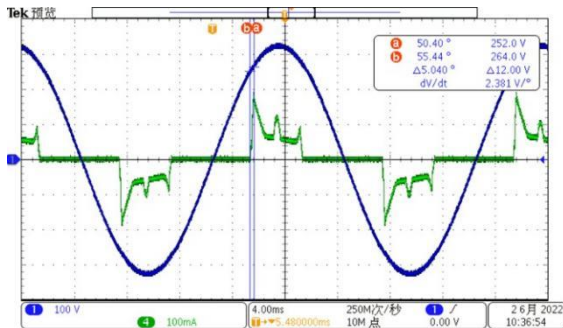
**Note:** The test data includes the wireless module.

#### 1.2 Total Harmonic current

**Standard:** requirements of IEC-61000-3-2:2019 ( the start phase of input current must be less than 60° and the peak phase of input current must be less than 65°, and the subharmonic should be meet 3<sup>rd</sup> subharmonic < 86%, 5<sup>th</sup> subharmonic <61%).

**Result:** Pass

**Test Condition:** 230Vac/50Hz Input, 260V/30mA Output



(CH1-Vin, CH4-Iin)

**Comments:** Start Phase:50.4°(Limit 60°),  
Peak Phase:55.44°(Limit 65°)

| Sub-harmonic    | Value | Limit |
|-----------------|-------|-------|
| 3 <sup>rd</sup> | 55.4% | 86%   |
| 5 <sup>th</sup> | 17.2% | 61%   |

#### 1.3 Standby Power

**Standard:** the standby power should be no more than 200mW at input 230Vac and remote dim off.

**Result:** Pass

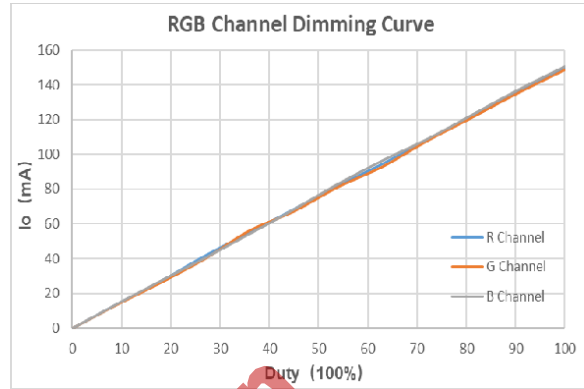
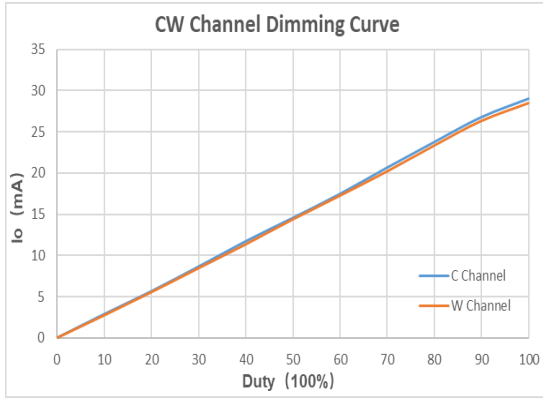
| Vin (Vac) | Fin (Hz) | Pstb (mW) |
|-----------|----------|-----------|
| 220       | 50       | 143.67    |
| 230       | 50       | 158.42    |
| 240       | 50       | 161.91    |

**Note:** The test data include external wireless module.

### 1.4 Dimming Curve

**Standard:** 1. the degree of dimming linearity  $< \pm 5\%$ ; 2.C and W channel dimming curves should keep as consistent as possible; R, G and B channel dimming curves should keep as consistent as possible.

**Result:** Pass



## 2. Dynamic characteristics

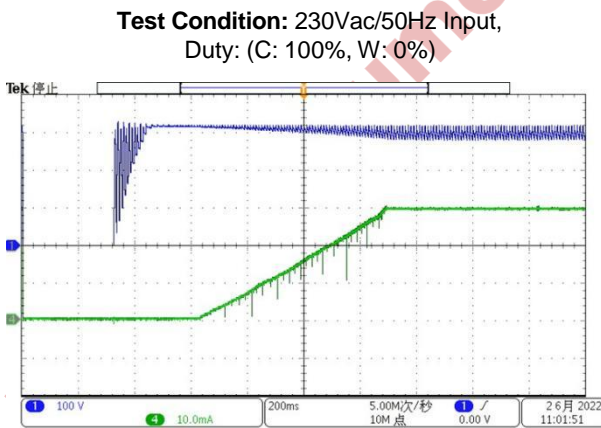
### 2.1 Power On

**Standard:**

1. the startup time should no more than 300ms;
2. the rising process of output current should be smooth with different duty under CW mode and RGB mode.

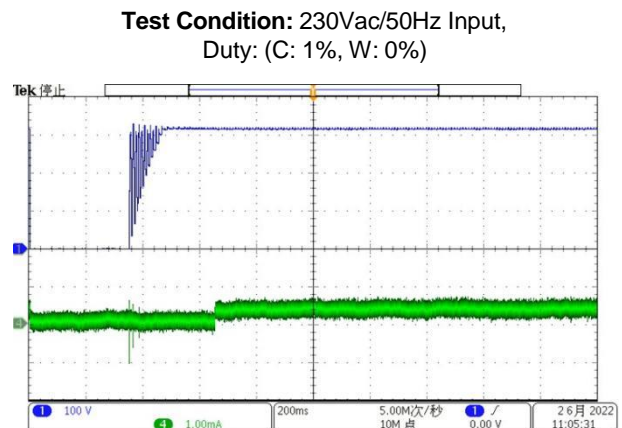
**Result:** Pass

**Waveforms (CW Mode):**



(CH1-Vbus, CH4-Io\_C)

**Comments:** Startup time = 295ms

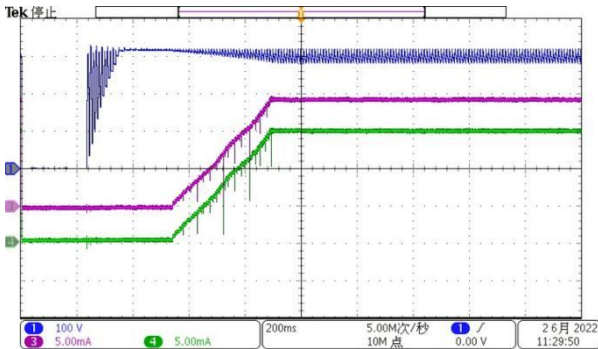


(CH1-Vbus, CH4-Io\_C)

**Comments:** Startup time = 295ms



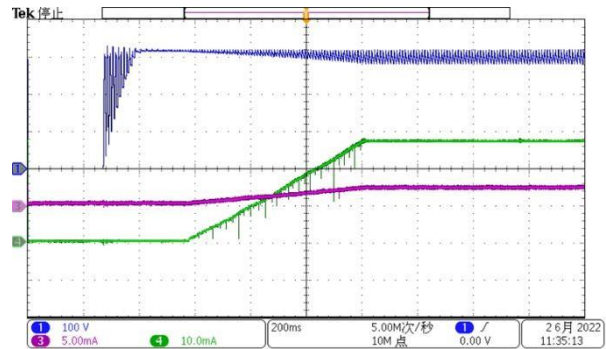
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 50%, W: 50%)



(CH1-Vbus, CH3-Io\_W, CH4-Io\_C)

**Comments:** CW Channel Start at the same time

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 90%, W: 10%)



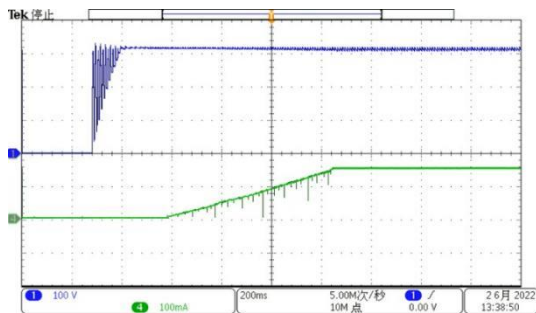
(CH1-Vbus, CH3-Io\_W, CH4-Io\_C)

**Comments:** CW Channel Start at the same time

**Note:** There exist some burrs in the current waveforms due to the changing duty cycle and the burrs do not affect the smoothness of the dimming process. Similar situations also appear in part of results below and no more detailed description.

**Waveforms (RGB Mode):**

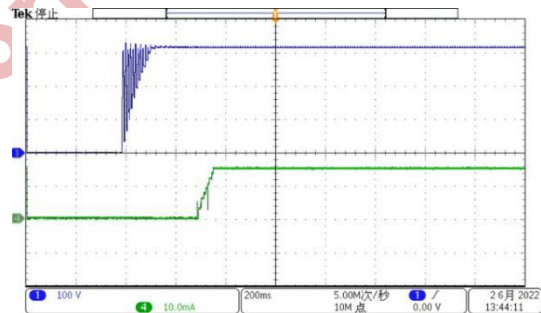
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 100%, G: 0%, B: 0%)



(CH1-Vbus, CH4-Io\_R)

**Comments:** Startup Time=295ms

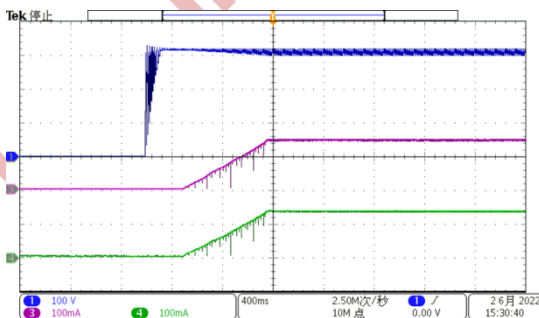
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 1%, G: 0%, B: 0%)



(CH1-Vbus, CH4-Io\_R)

**Comments:** Startup Time=295ms

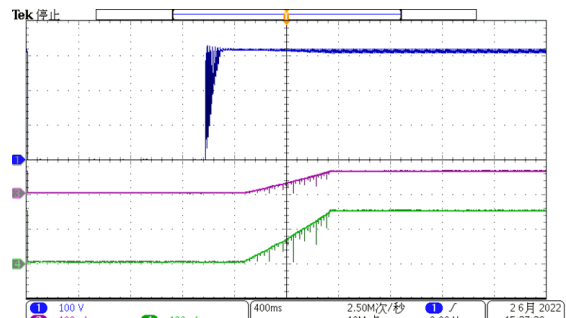
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 33%, G: 33%, B: 33%)



(CH1-Vbus, CH3-Io\_G, CH4-Io\_R)

**Comments:** RGB Channel Start at the same time

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 80%, G: 0%, B: 20%)



(CH1-Vbus, CH3-Io\_G, CH4-Io\_R)

**Comments:** RGB Channel Start at the same time

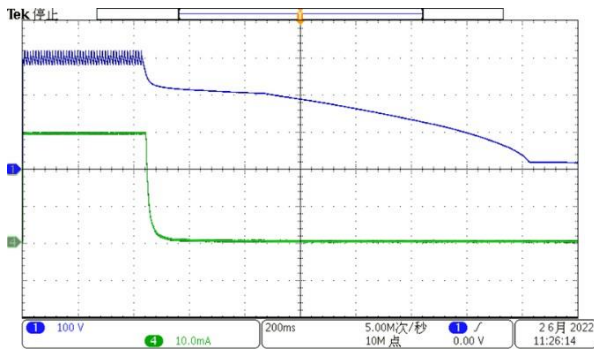
## 2.2 Power Off

**Standard:** the falling process of output current should be smooth and no obvious upwarp with different duty under CW mode and RGB mode.

**Result:** Pass

### Waveforms (CW Mode):

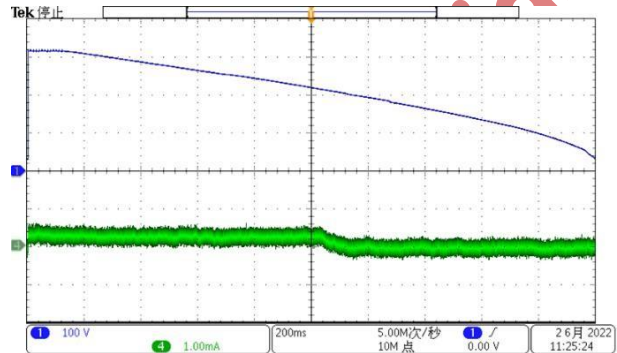
**Test Condition:** 230Vac/50Hz Input,  
Duty: (C: 100%, W: 0%)



(CH1-Vbus, CH4-Io\_C)

**Comments:** Power Off OK

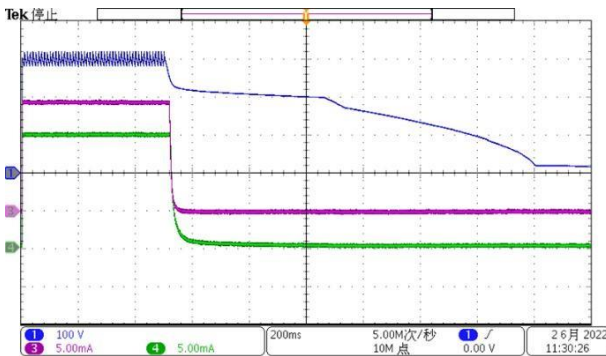
**Test Condition:** 230Vac/50Hz Input,  
Duty: (C: 1%, W: 0%)



(CH1-Vbus, CH4-Io\_C)

**Comments:** Power Off OK

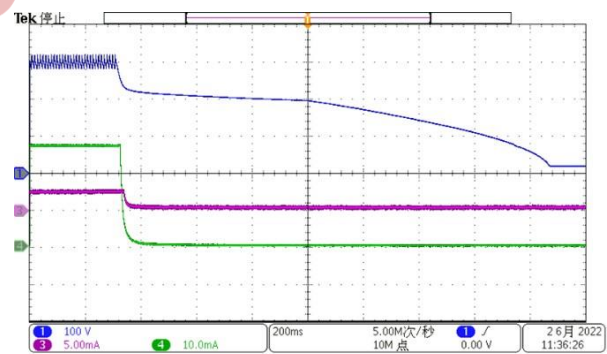
**Test Condition:** 230Vac/50Hz Input,  
Duty: (C: 50%, W: 50%)



(CH1-Vbus, CH3-Io\_W, CH4-Io\_C)

**Comments:** CW Channel Stop at the same time

**Test Condition:** 230Vac/50Hz Input,  
Duty: (C: 90%, W: 10%)

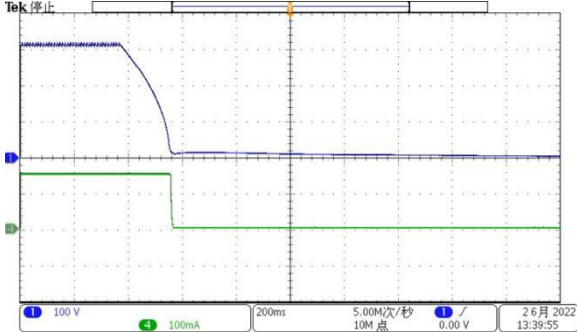


(CH1-Vbus, CH3-Io\_W, CH4-Io\_C)

**Comments:** CW Channel Stop at the same time

**Waveforms (RGB Mode):**

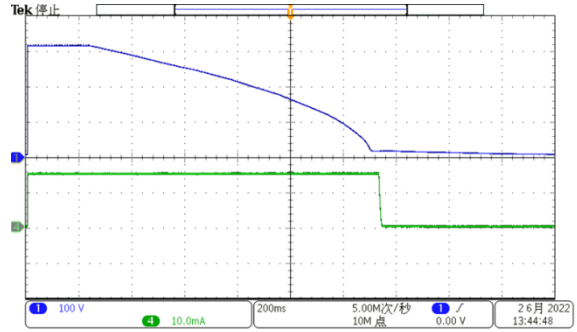
**Test Condition:** 230Vac/50Hz Input,  
Duty: (R: 100%, G: 0%, B: 0%)



(CH1-Vbus, CH4-Io\_R)

**Comments:** Power Off OK

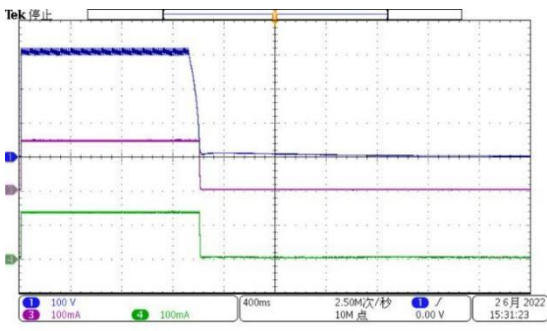
**Test Condition:** 230Vac/50Hz Input,  
Duty: (R: 1%, G: 0%, B: 0%)



(CH1-Vbus, CH4-Io\_R)

**Comments:** Power Off OK

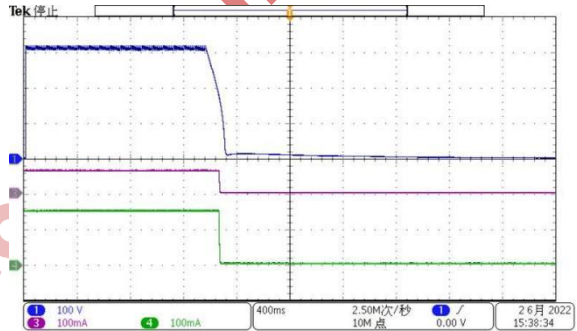
**Test Condition:** 230Vac/50Hz Input,  
Duty: (R: 33%, G: 33%, B: 33%)



(CH1-Vbus, CH3-Io\_G, CH4-Io\_R)

**Comments:** RGB Channel Stop at the same time

**Test Condition:** 230Vac/50Hz Input,  
Duty: (R: 80%, G: 0%, B: 20%)



(CH1-Vbus, CH3-Io\_G, CH4-Io\_R)

**Comments:** RGB Channel Stop at the same time

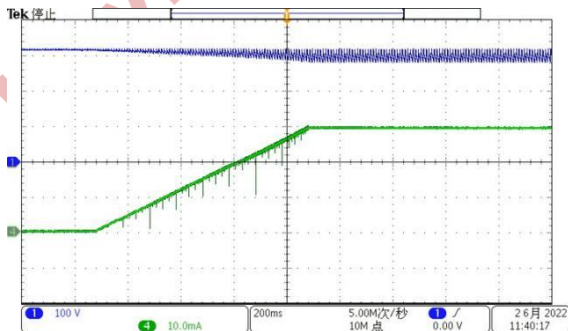
**2.3 Dimming On**

**Standard:** the rising process of output current should be smooth with different duty under CW mode and RGB mode.

**Result:** Pass

**Waveforms (CW Mode):**

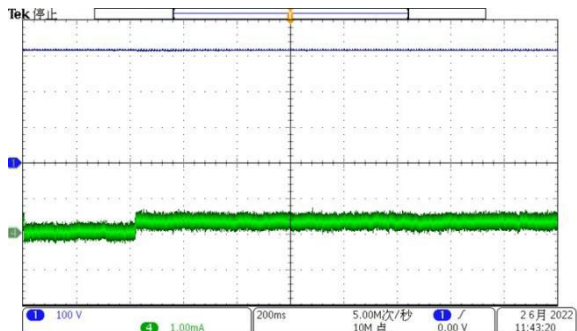
**Test Condition:** 230Vac/50Hz Input,  
Duty: (C: 100%, W: 0%)



(CH1-Vbus, CH4-Io\_C)

**Comments:** DIM ON OK

**Test Condition:** 230Vac/50Hz Input,  
Duty: (C: 1%, W: 0%)

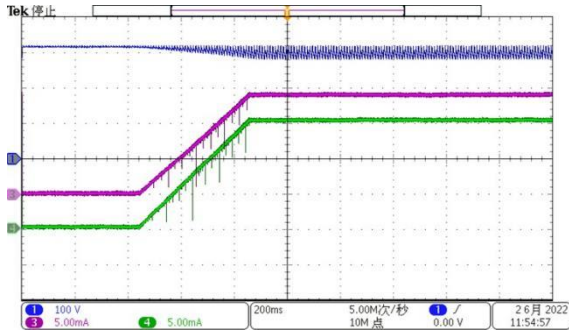


(CH1-Vbus, CH4-Io\_C)

**Comments:** DIM ON OK



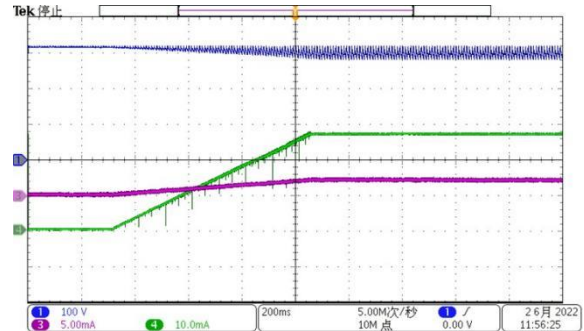
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 50%, W: 50%)



(CH1-Vbus, CH3-Io\_W, CH4-Io\_C)

**Comments:** CW Channel DIM ON at the same time

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 90%, W: 10%)

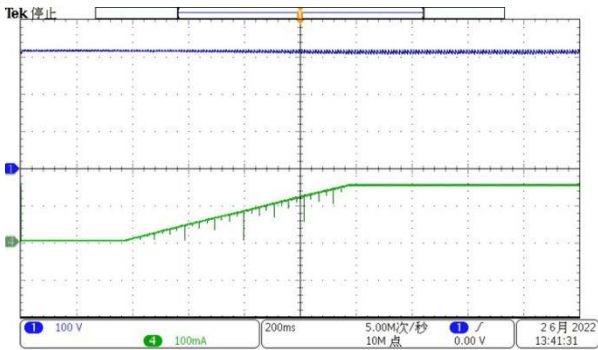


(CH1-Vbus, CH3-Io\_W, CH4-Io\_C)

**Comments:** CW Channel DIM ON at the same time

**Waveforms (RGB Mode):**

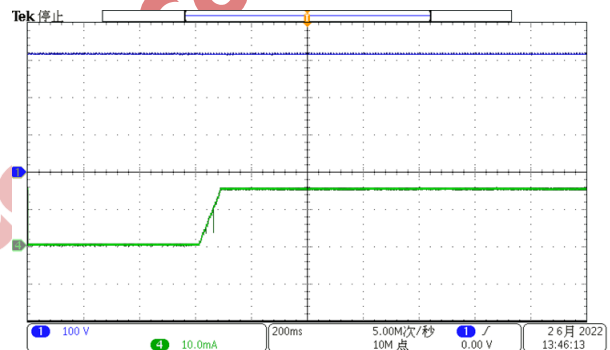
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 100%, G: 0%, B: 0%)



(CH1-Vbus, CH4-Io\_R)

**Comments:** DIM ON OK

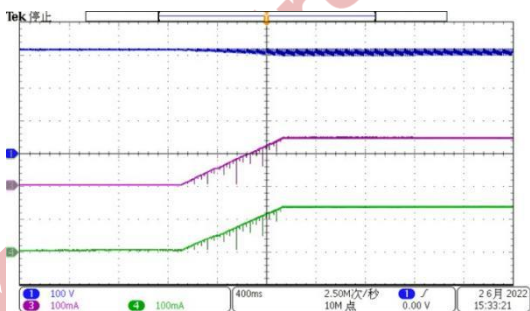
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 1%, G: 0%, B: 0%)



(CH1-Vbus, CH4-Io\_R)

**Comments:** DIM ON OK

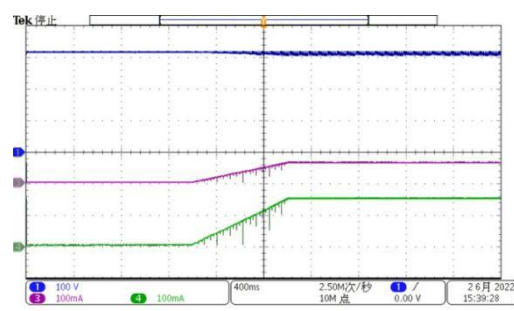
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 33%, G: 33%, B: 33%)



(CH1-Vbus, CH3-Io\_G, CH4-Io\_R)

**Comments:** RGB Channel DIM ON at the same time

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 80%, G: 0%, B: 20%)



(CH1-Vbus, CH3-Io\_G, CH4-Io\_R)

**Comments:** RGB Channel DIM ON at the same time

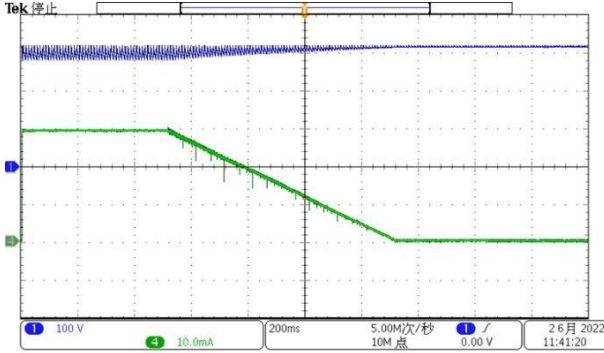
**2.4 Dimming Off**

**Standard:** the falling process of output current should be smooth with different duty under CW mode and RGB mode.

**Result:** Pass

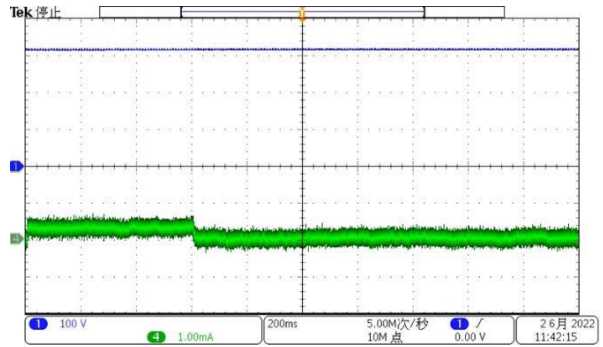
**Waveforms (CW Mode):**

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 100%, W: 0%)



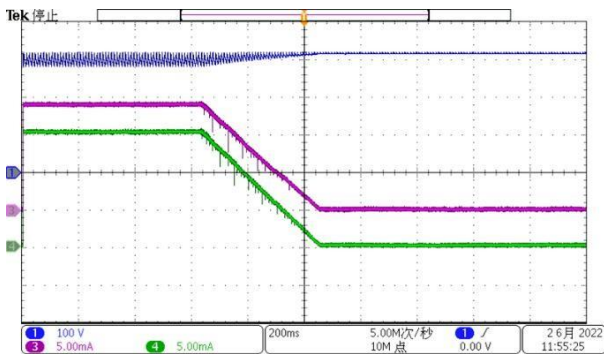
(CH1-Vbus, CH4-Io\_C)  
**Comments:** DIM OFF OK

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 1%, W: 0%)



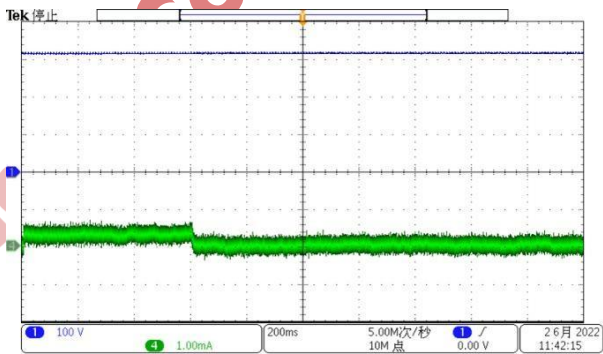
(CH1-Vbus, CH4-Io\_C)  
**Comments:** DIM OFF OK

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 50%, W: 50%)



(CH1-Vbus, CH3-Io\_W, CH4-Io\_C)  
**Comments:** CW Channel DIM OFF at the same time

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 90%, W: 10%)

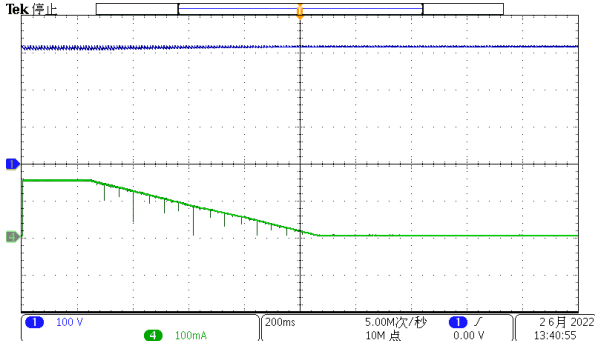


(CH1-Vbus, CH3-Io\_W, CH4-Io\_C)  
**Comments:** CW Channel DIM OFF at the same time

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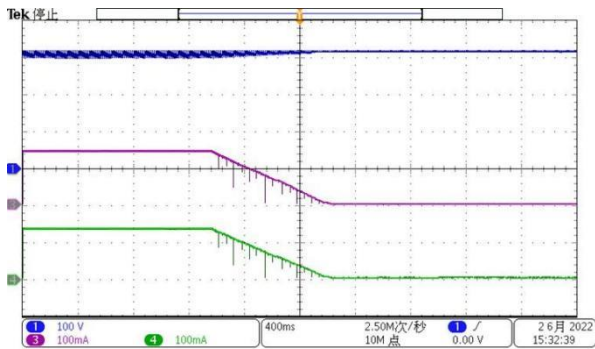
**Waveforms (RGB Mode):**

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 100%, G: 0%, B: 0%)



(CH1-Vbus, CH4-Io\_R)  
**Comments:** DIM OFF OK

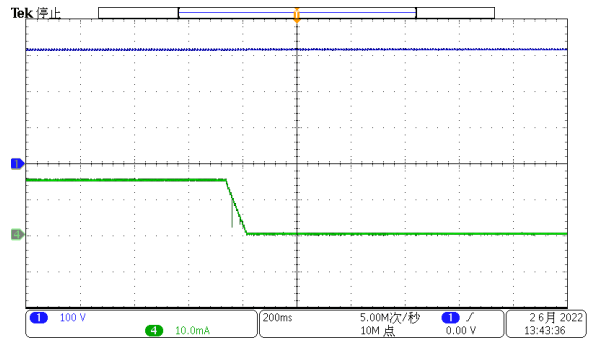
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 33%, G: 33%, B: 33%)



(CH1-Vbus, CH3-Io\_G, CH4-Io\_R)

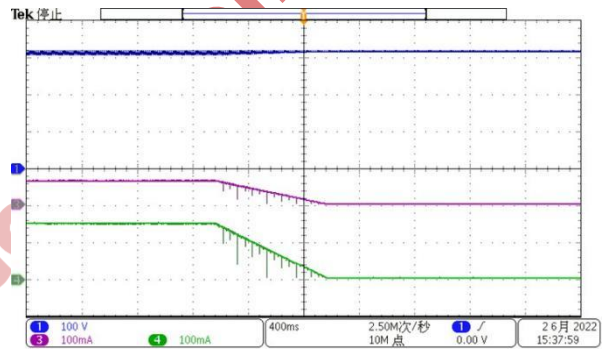
**Comments:** RGB Channel DIM OFF at the same time

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 1%, G: 0%, B: 0%)



(CH1-Vbus, CH4-Io\_R)  
**Comments:** DIM OFF OK

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 80%, G: 0%, B: 20%)



(CH1-Vbus, CH3-Io\_G, CH4-Io\_R)

**Comments:** RGB Channel DIM OFF at the same time

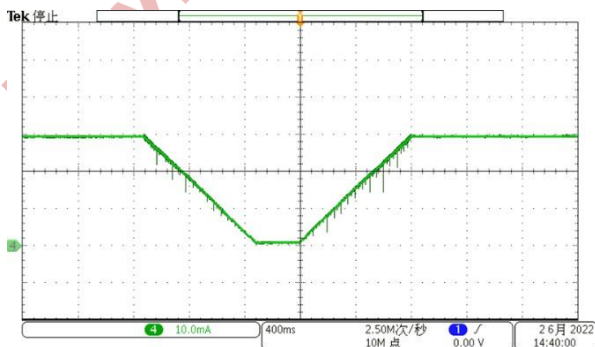
**2.5 Dimming Dynamic**

**Standard:** the falling process of output current should be smooth under CW mode and RGB mode when duty changes.

**Result:** Pass

**Waveforms (CW Mode):**

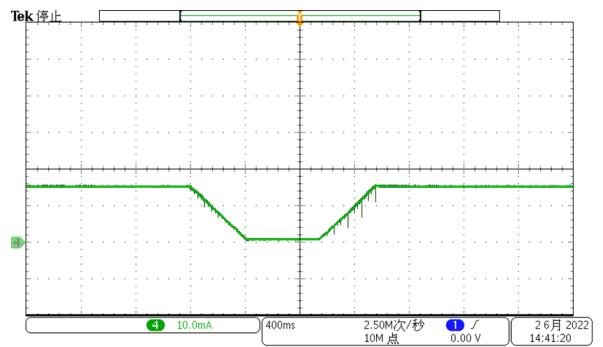
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 100%) → (C: 1%) → (C: 100%)



(CH4-Io\_C)

**Comments:** Dimming OK

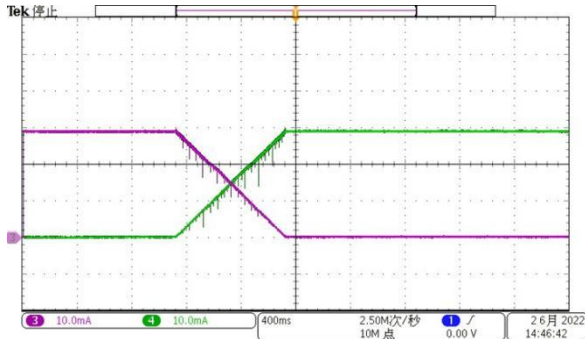
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 50%) → (C: 10%) → (C: 50%)



(CH4-Io\_C)

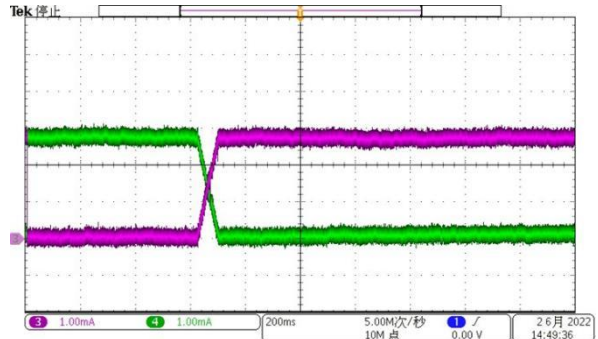
**Comments:** Dimming OK

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 100%, W: 0%)→ (C: 0%, W: 100%)



(CH3-Io\_W, CH4-Io\_C)  
 Comments: Dimming OK

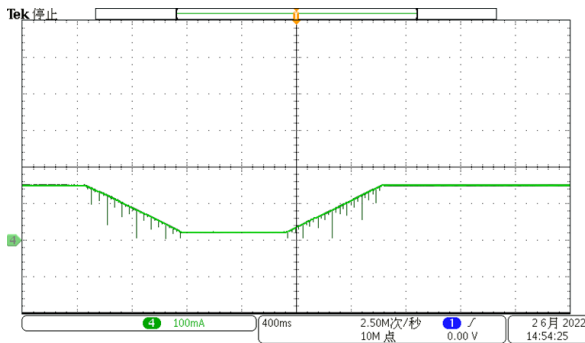
**Test Condition:** 230Vac/50Hz Input,  
 Duty: (C: 10%, W: 0%)→ (C: 0%, W: 10%)



(CH1-SDA, CH3-Io\_W, CH4-Io\_C)  
 Comments: Dimming OK

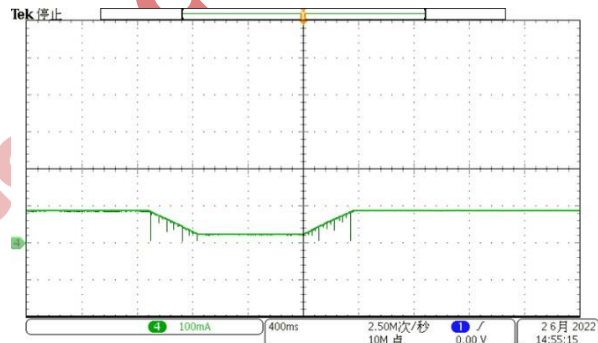
**Waveforms (RGB Mode):**

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 100%)→ (R: 1%)→ R: 100%)



(CH4-Io\_R)  
 Comments: Dimming OK

**Test Condition:** 230Vac/50Hz Input,  
 Duty: (R: 50%)→ (R: 10%)→ (R: 50%)



(CH4-Io\_R)  
 Comments: Dimming OK




### 3. Thermal Test


**Standard:** CW mode:  $\Delta T < 90^{\circ}\text{C}$ ; RGB mode:  $\Delta T < 70^{\circ}\text{C}$

**Result:** Pass

**Test Condition:** Burn in for 1 hour in the A60 lamp cavity @ confined container (30cm\*30cm\*30cm plastic box) and steady environment with no airflow, Ta is the temperature inside the plastic box.

| Test Condition: CW Mode, Input Power 9W  |           |           |            |           |
|--|-----------|-----------|------------|-----------|
| Component                                | 230Vac    |           | 240Vac     |           |
|  | Ta=29.6°C |           |            |           |
|  | Tc(°C)    | Trise(°C) | Tc(°C)     | Trise(°C) |
| KP18069ESPA                              | 103.3     | 73.7      | 109.2      | 79.7      |
| KP15051SPA                               | 93.1      | 63.5      | 94.7       | 65.2      |
| KP521403LGA                              | 101.6     | 72        | 100.1      | 70.6      |
| Light Board                              | 99.9      | 70.3      | 103.8      | 74.3      |
| Test Condition: RGB Mode, Input Power 6W |           |           |            |           |
| Component                                | 230Vac    |           |            |           |
|  | Ta=26.5°C |           |            |           |
|  | Tc (°C)   |           | Trise (°C) |           |
| KP18058ESPA                              | 87.5      |           | 61         |           |
| KP35026VGA                               | 88.4      |           | 61.9       |           |
| KP18002ESPA                              | 75.4      |           | 48.9       |           |
| Light Board                              | 77.8      |           | 51.3       |           |





#### 4. EMC/EMS Test

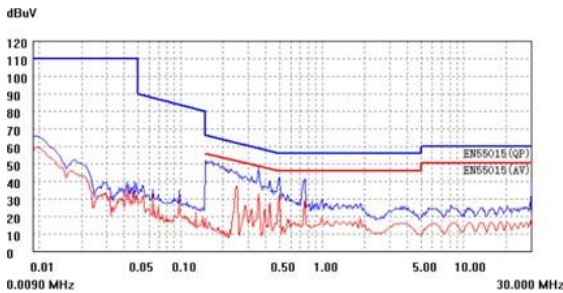
Standard:

|             |             |
|-------------|-------------|
| Standard    | EN55015     |
| Content     | CE/RE       |
| Requirement | 6 dB Margin |

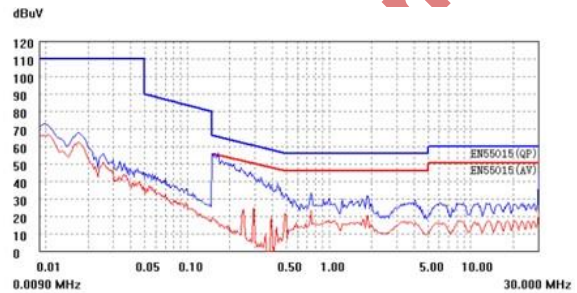
#### 4.1 Conducted Emissions

Result : Pass

Test Condition: Vin=230VAC/50Hz, CW Mode, Input Power 9W

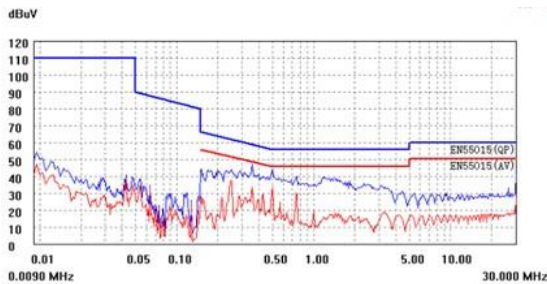


Conduction EMI---LINE

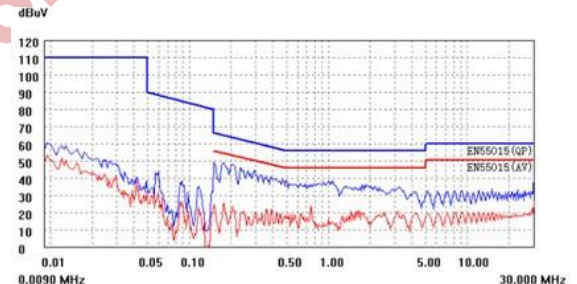


Conduction EMI---NEUTRAL

Test Condition: Vin=230VAC/50Hz, RGB Mode, Input Power 6W



Conduction EMI---LINE



Conduction EMI---NEUTRAL

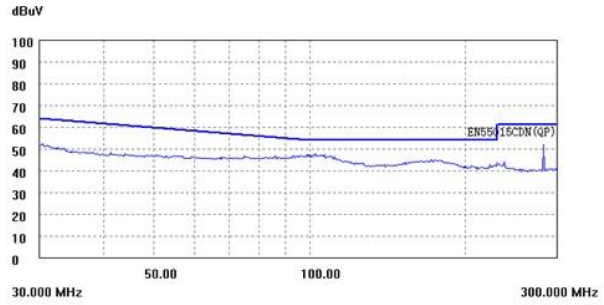
#### 4.2 Radiated Emissions

Result : Pass

Test Condition: Vin=230VAC/50Hz, CW Mode, Input Power 9W



Test Condition: Vin=230VAC/50Hz, RGB Mode, Input Power 6W





**Demo Board Test Report**  
**220~265VAC/50HZ, PF>0.7, CW 260V/30mA and RGB 15V/150mA**  
**Five-Channel Linear Solution for Smart LED with KP18069**

## 5. Surge Test

Line to Line 1kV surge testing was completed according to IEC61000-4-5. Input voltage was set at 230VAC/50Hz. Output was loaded at full load and operation was verified following each surge event. Each injection phase below is tested with 5 times and hold for 30 seconds before next one.

**Result : Pass**

| Input Voltage (VAC) | Surge Level (V) | Injection Location | Injection Phase(°) | Test Result (Pass/Fail) |
|---------------------|-----------------|--------------------|--------------------|-------------------------|
| 230Vac/50Hz         | +1000           | L to N             | 0                  | Pass                    |
|                     | +1000           | L to N             | 90                 | Pass                    |
|                     | +1000           | L to N             | 180                | Pass                    |
|                     | +1000           | L to N             | 270                | Pass                    |
|                     | -1000           | L to N             | 0                  | Pass                    |
|                     | -1000           | L to N             | 90                 | Pass                    |
|                     | -1000           | L to N             | 180                | Pass                    |
|                     | -1000           | L to N             | 270                | Pass                    |

## Test Setup Guide

1. Set the AC Power Source between 220VAC and 265VAC.
2. Connect the AC Power Source terminal to the “L” and “N” terminals on the Demo Board
3. Turn on the AC Power Source to make system startup; and Turn off the AC Power Source to make system shutdown.



**Demo Board Test Report**  
**220~265VAC/50HZ, PF>0.7, CW 260V/30mA and RGB 15V/150mA**  
**Five-Channel Linear Solution for Smart LED with KP18069**

### Revision History

| DATE       | REV | DESCRIPTION   |
|------------|-----|---------------|
| 2022/06/23 | 1.0 | First Release |

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